

What is Claimed is:

A method for allocating code pairs of orthogonal spreading codes having guard bits of 0, said method comprising:

5       generating at least one orthogonal code set based upon the orthogonal spreading codes;

      determining one of the at least one orthogonal code set as a representative orthogonal code set; and

      allocating the order according to a determined rule based upon the  
10       representative orthogonal code set.

2.       The method according to claim 1, further comprising the step of matching the orthogonal spreading codes to at least one element included in the representative orthogonal code set in the ascending order if the representative  
15       orthogonal code set is determined.

3. The method according to claim 1, wherein said step of generating the orthogonal code set comprises the steps of:

      generating the orthogonal spreading codes corresponding to a selected code  
20       length;

      adjusting the interval of an IFW length based upon a selected code component length; and

      generating the at least one orthogonal code set and at least one element included in each of the at least one orthogonal code set until a certain condition is satisfied.

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4. The method according to claim 3, wherein the condition is  $2^{K-1} \leq L_{IFW} \leq 2^K$ .

5. The method according to claim 3, wherein the at least one orthogonal code set is calculated using below Equation:

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$$O_K = \{LS_{(K-1) \cdot 2^{m-2}}^{N+2 \cdot L_{(K-1) \cdot 2^{m-2}}}, LS_{(K-1) \cdot 2^{m-2}+1}^{N+2 \cdot L_{(K-1) \cdot 2^{m-2}+1}}, \dots, LS_{(K-1) \cdot 2^{m-2}+2^{m-2}-1}^{N+2 \cdot L_{(K-1) \cdot 2^{m-2}+2^{m-2}-1}}\},$$

wherein  $O_k$  is the  $k$ th orthogonal code set, and  $LS_{(k-1) \cdot 2^{m-2}+j}^{N+2 \cdot L_{(k-1) \cdot 2^{m-2}+j}}$  is the  $j$ th orthogonal spreading code of the  $k$ th orthogonal code set.

6. The method according to claim 1, further comprising the following steps of:  
10 judging whether to differently allocate the orthogonal spreading codes corresponding to the at least one element of the representative code set to an I branch and a Q branch; and

judging whether to allocate code pairs which minimize a peak-to-average power ratio if differently allocated.

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7. The method according to claim 6, further comprising the following steps of:  
generating at least one code set using the representative code set if the orthogonal spreading codes are not differently allocated to the I branch and the Q branch;

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selecting the at least one code set in a predetermined order; and  
allocating the order of the codes according to a predetermined rule based upon at least one element of the selected code set.

8. The method according to claim 7, wherein the at least one code set is

calculated using below Equation:

$$L_k = \{l_{2^i}, l_{2^{i+1}}, l_{2^{i+2}}, \dots, l_{2^{i+n-2}}, l_{2^{i+n-1}}\},$$

wherein  $L_k$  is the  $k$ th code set, and  $l$  is an element included in the code set.

- 5           9. The method according to claim 6, further comprising the following steps of:  
generating at least one code pair based upon the representative code set if the  
code pair is allocated to minimize the peak-to-average power ratio;  
generating a code pair set based upon the at least one code pair; and  
allocating the code order based upon the at least one code pair included in the  
10 code pair set.

10. The method according to claim 9, wherein the code pair is generated on the  
basis of the center of the at least one element of the representative code set, and wherein  
the at least one element is arrayed in the ascending order.

- 15           11. The method according to claim 6; further comprising the following steps  
of:

grouping at least one code pair set according to a determined rule based upon  
the representative code set if the code pair which minimizes the peak-to-average power  
20 ratio is not allocated;

selecting one from the at least one code pair set according to the determined  
order;

generating at least one code pair on the basis of the center of the at least one  
element included in the selected code pair set; and

- 25           allocating the code order based upon the at least one code pair.

12. A method for generating an orthogonal code set using orthogonal spreading codes, said method comprising the following steps of:

generating orthogonal spreading codes corresponding to a selected code length;

5 adjusting the interval of the length of an IFW based upon a selected code component length; and

generating at least one orthogonal code set based upon the orthogonal spreading code if the length of the IFW interval is adjusted.

10 13. The method according to claim 12, wherein the at least one orthogonal code set is generated until a predetermined condition is satisfied.

14. A method for allocating code pairs using orthogonal spreading codes, said method comprising the following steps of:

15 determining one of at least one orthogonal code set as a representative orthogonal code set;

allocating different orthogonal spreading codes to an I branch and a Q branch, and judging whether to minimize a peak-to-average power ratio;

generating at least one code pair based upon the representative orthogonal code set according to a result of said judging S 62 in Fig.5;

20 generating a code pair set based upon the at least one code pair; and

allocating the code order based upon the at least one code pair included in the code pair set.

25 15. The method according to claim 14, wherein the code pair is generated on

the basis of the center of at least one element of the representative orthogonal code set,  
wherein the at least one element is arrayed in the ascending order.

16. A method for allocating code pairs using orthogonal spreading codes, said  
5 method comprising the following steps of:

determining one of at least one orthogonal code set as a representative  
orthogonal code set;

allocating different orthogonal spreading codes to an I branch and a Q branch,  
and judging whether to minimize a peak-to-average power ratio;

10 grouping at least one code pair set according to a rule determined based upon  
the representative orthogonal code set as a result of said judging S 62 in Fig.5;

selecting one from the at least one code pair according to a determined order;

generating at least one code pair based on at least one element included in the  
selected code pair set; and

15 allocating the code order based upon the at least code pair.

17. A method for allocating code pairs using orthogonal spreading codes, said  
method comprising the following steps of:

determining one of at least one orthogonal code set as a representative  
20 orthogonal code set;

judging whether to identically allocate the same orthogonal spreading code to  
an I branch and a Q branch;

generating at least one code set by using the orthogonal code set according to a  
result of said judging S 61 in Fig.5;

25 selecting the at least one code set in a predetermined order; and

allocating the code order according to a predetermined rule based upon at least one element of the selected code set.

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